

Togiak National Wildlife Refuge

Comprehensive Conservation Plan Revision

Significant Planning Issues

April 26, 2001

This report describes the planning issues that are guiding revision of the Togiak Comprehensive Conservation Plan (CCP). It is a living, working document that evolves as work on the plan progresses. The issues provide a foundation for developing and evaluating alternative management strategies for the Togiak Refuge. The issues were defined by the Core Planning Team, which consists of representatives from the U.S. Fish and Wildlife Service, the State of Alaska, and tribal governments of six villages associated with the Togiak Refuge. The issues incorporate verbal comments from local meetings and written comments received from across the country that were obtained as part of project scoping.

Table of Contents

| | |
|--|----|
| Water Quality | 5 |
| Legal Requirements and Regulations | 5 |
| Available Data | 6 |
| Current Management | 6 |
| Data Gaps | 7 |
| Possible Ways to Address the Issue | 7 |
| | |
| Health of Fish | 8 |
| Laws and Regulations | 9 |
| Current Management/Available Data | 10 |
| Effects of Catch and Release. | 11 |
| Risk of Introduced Disease. | 12 |
| Populations of Concern | 13 |
| Data Gaps | 14 |
| Possible Ways to Address the Issue | 14 |
| | |
| Subsistence Opportunities | 15 |
| Laws and Regulations | 15 |
| Indicators of Subsistence Quality | 16 |
| Status and Availability of Fish and Wildlife Populations | 16 |
| Access to Preferred and Traditional Fishing Areas. | 16 |
| Trespass. | 17 |
| Conflicts with sport anglers. | 17 |
| Litter and Waste in the River Corridor | 17 |
| Opportunity for a Safe Experience. | 17 |
| Social Aspects of Subsistence. | 18 |
| Current Management | 18 |
| River Rangers. | 18 |
| Airport contacts. | 18 |
| Limits on Guided Use | 19 |
| Fishing and Camping Regulations. | 19 |
| Data Gaps | 20 |
| Possible Ways to Address the Issue | 20 |

| | |
|---|----|
| Recreation Quality | 22 |
| Trends in recreation use patterns | 23 |
| Guided Use. | 23 |
| Non-guided Use. | 24 |
| Indicators of Recreation Quality | 25 |
| Fishing Quality..... | 26 |
| Solitude | 26 |
| Camp encounters..... | 28 |
| Amount of time within sight of other groups. | 28 |
| Percent of camping areas passed because they were occupied. | 28 |
| Number of permanent and semi-permanent tent camps. | 29 |
| Percent of sites with litter and human waste. | 29 |
| Data Gaps | 29 |
| Possible Ways to Address the Issue | 29 |
| | |
| Impacts of Public Use on Wildlife in the River Corridors | 32 |
| Game Displacement | 32 |
| Current Management..... | 33 |
| Bear-Human Interactions | 33 |
| Current Management..... | 34 |
| Data Gaps..... | 35 |
| Possible Ways to Address the Issue | 35 |
| | |
| Management of Human Use and Wildlife at Cape Peirce | 36 |
| Laws and Regulations | 36 |
| Available Data | 37 |
| Pacific walrus | 37 |
| Harbor and Spotted Seals | 38 |
| Steller Sea Lions | 39 |
| Disturbance of marine mammals | 39 |
| Aircraft. | 39 |
| Boats. | 40 |
| Other Disturbances. | 40 |
| Current Management | 40 |
| Data Gaps | 42 |
| Possible Ways to Address the Issue | 42 |

| | |
|--|----|
| Possible New Land Management Designations | 44 |
| Wilderness | 44 |
| Inventory. | 44 |
| Wilderness Study. | 45 |
| Recommendation. | 46 |
| Wild and Scenic Rivers | 46 |
| Management Direction for Designated Rivers. | 47 |
| Wild and Scenic River Study Process. | 48 |

Water Quality

What is the current status of water quality on the Togiak Refuge? What is the Refuge's role in improving or maintaining water quality? What is the effect of human uses on water quality, especially in the Kanektok River?

Preserving water quality is one of the primary purposes for which the Togiak Refuge was established. Togiak Refuge waters provide habitat for diverse and abundant populations of fish. Water quality is not just a concern for fish and wildlife; people who live near the Togiak Refuge depend on high quality river water and adequate treatment facilities for household use.

There is concern that improperly disposed human waste from Refuge visitors may be contributing to contamination of waters within and downstream from the Togiak Refuge. A related concern, although not one that can be dealt with directly by revising the plan, is the availability of state-approved waste disposal facilities in Quinhagak, Goodnews Bay, and Togiak.

Another concern is the impacts of mine tailings and abandoned mines on Togiak Refuge waters. There are approximately 20 active placer claims within the Togiak Refuge, as well as many abandoned claims. Many other claims are outside the Refuge boundary, but are upstream from Refuge lands. Most of the claims are along the Salmon River near Platinum, near the headwaters of the Arolik River, or within the Goodnews River watershed. Heavy metals associated with gold-bearing minerals can be released into the water during placer mining and sluicing operations. Some of these metals are toxic to people at low concentrations and are even more toxic to fish and wildlife either through direct contact or ingestion of contaminated food items.

Legal Requirements and Regulations

Water quality was established as a primary purpose of the Togiak Refuge in ANILCA. Standards for water quality are established by several laws and regulations, including the Clean Water Act. Several agencies monitor and regulate water quality, such as the Environmental Protection Agency and several agencies of the State of Alaska, including the Department of Natural Resources, Department of Fish and Game, and Department of Environmental Conservation. The U. S. Fish and Wildlife Service complies with these various laws and regulations and cooperates with the various management agencies responsible for enforcing them.

Available Data

Tests on basic water chemistry were conducted as part of the Wild and Scenic River Study of the Kanektok in the mid-1980s. The Togiak Refuge also sampled water quality in 1990 to determine the fecal coliform counts of the major river drainages within the Togiak Refuge. These data were not analyzed apparently because laboratory tests would be unable to distinguish between human fecal coliform and that of other mammals. Other data have been collected by the Tribal Natural Resources Department in Quinhagak; the results are not available at this time but the tribe plans to hire a contractor to compile and analyze them in the near future. The tribe is working on an environmental protection plan for the watershed.

In 1990 the USFWS conducted a study to determine the level of contaminants from mining in the Salmon River. Samples were collected from control sites (which should not have shown any effects from mining), tailing piles, the lower part of the river and from juvenile salmon. The levels of metals in the control sediments and control fish were higher than those of the tailings or the downstream samples, except for copper, which were not significant and did not exceed the action level. This study used a small sample size and the background levels of metals in the environment were high, two factors that may have influenced the results. A tour of some abandoned mine sites was conducted in September 2000, revealing a number of site-specific concerns; GPS coordinates are available.

Current Management

Outhouses are available at Kagati lake, at the head of the Kanektok, and at Goodnews Lake, where many people begin their trips. Information about proper waste disposal is given to Togiak Refuge visitors when contacted by Refuge personnel or air taxi operators in Dillingham, or by the river rangers stationed on each river. On the Refuge, visitors are required to deposit waste at least 100 feet from any lake, river or stream and 4 to 6 inches under ground to encourage bacterial decomposition. Guides either carry out waste, dispose of it in outhouses at temporary camps, or incinerate it, all legal methods.

Below the Wilderness boundary, the rivers are bordered by private lands. People often trespass to dispose waste, or do not properly dispose of waste to avoid trespassing. On the Kanektok, floaters are required to carry out their waste. Currently the village of Quinhagak in cooperation with the Togiak Refuge issues honey buckets for storage of waste for disposal at Quinhagak, where floaters end their trips. At this time however, there are poor facilities to properly empty and clean the buckets at the village. This has led to a number of visitors choosing not to use the buckets.

As part of the river ranger program, rangers document the number of campsites with visible human waste on each of the three rivers. Over the last four years the number of sites examined on each river has varied considerably, as has the method by which sites are sampled, making trends difficult to detect. Nonetheless, the data suggest that there is room for improvement.

Water quality will continue to be an issue for the Togiak Refuge. The ideal condition would be to reach a level of no contamination, and no campsites with visible human waste.

Although the new plan will not be able to address all of the environmental quality issues, many of which involve private lands, the CCP planning process is an opportunity to compile and share existing information and work toward possible solutions.

Data Gaps

Little data exists for water quality on the Togiak Refuge. Several other plans have recommended that the Togiak Refuge collect water quality data. Collecting data consistently and in ways that point to actions that should be taken, is a priority.

For the next three years, the Fish and Wildlife Service will expand its studies of water quantity on the Togiak Refuge to include analysis of basic water chemistry at 20-some locations. This will greatly expand baseline data available. During summer, 2001 the Togiak Refuge also will study water on the Kanektok where it flows out of the Togiak Wilderness, conducting assessments of fecal coliform or e coli. The village of Quinhagak plans to continue testing on the Lower Kanektok. The Refuge and village plan to coordinate analysis of these data.

Possible Ways to Address the Issue

Increase water quality monitoring

Improve education on waste disposal

Require floaters to carry out all solid human waste

Work with village(s) to provide/improve waste disposal stations

Increase enforcement of State, Refuge, and Corporation regulations regarding disposal

Install outhouses or waste disposal facilities at select sites along the rivers

Health of Fish

Are fish stocks healthy? What are the impacts to spawning areas from public use, trampling by anglers, and boats with jet units? What is the effect of catch-and-release fishing on fish mortality? How can the Togiak Refuge minimize the risks of introduction of whirling disease or other parasites that could infect fish populations?

The salmon of Bristol and Kuskokwim Bays are the single most important resource in the entire area. The income and food which these runs provide are critical to the livelihoods of almost everyone in Bristol Bay. Because of the importance of these fisheries, they are monitored, sampled, and studied by federal and state agencies to ensure they continue to provide for the communities near the Togiak Refuge. Of the hundreds of thousands of salmon which return to rivers within the Togiak Refuge every year, only a few thousand are caught or taken by sport anglers and local residents. The vast majority of the harvest is taken by commercial permit. It is unlikely that current or future levels of sport or subsistence harvest will impact salmon stocks within the Togiak Refuge.

The resident fish populations of the Togiak Refuge are of great value and importance to people who live throughout Bristol and Kuskokwim Bays. Many people depend on these fish to contribute to their subsistence needs. These fish are also a primary reason anglers come from all over the world to the Togiak Refuge. The sport fishing industry which operates within the Togiak Refuge provides more than 50 jobs and contributes more than 1.5 million dollars of income to the local economy. Because of the importance of these fish stocks, their management is one of the primary goals of the Togiak Refuge. Continued monitoring will be required to assess changes occurring in resident fish populations. By assessing these changes the Togiak Refuge will be able to determine if resident fisheries management goals are being achieved.

The issue of fish mortality associated with catch-and-release sport fishing has been raised at village meetings and through the scoping process. This long-standing issue is broader than a concern over the health of fish stocks; it is clearly also an issue grounded in cultural values. However, in the context of this issue (health of fish), we will only address the mortality aspect; the cultural values conflict will be described further under the Subsistence Opportunity issue. Local residents also may oppose tagging studies, because of effects on individual fish.

Another concern is protection of fish habitat and the effects of wading or motor boating on key spawning areas at key times of the season. Research on wading has found variable

effects, and studies of motorboat use effects on fish habitat in Alaska have not found effects large enough to warrant regulation on those rivers. Kicking up eggs to attract fish does not appear to be a problem on these rivers compared to some locations in the lower 48. Bank erosion from angler trampling appears minimal because most angling takes place on gravel bars. Many rivers are already seasonally closed to sport fishing for king salmon to protect spawning fish (for example, the Kanektok is closed for kings after July 25). Neither the State nor the Refuge can tell anglers they can't wade in the river, but the State does have the authority to close an area to fishing under some circumstances.

The other facet of this issue is the risk of disease introduced from other regions. Anglers from around the country and the world travel to Alaska and fish in the remote waters wearing the same clothing, especially waders, that they may have used in other waters where infectious disease occurs. Transportation of disease, aquatic vegetation, and aquatic organisms has occurred in other areas of the country.

Of the greatest concern is whirling disease (*Myxobolus cerebralis*), a parasite that was probably introduced to the United States during the 1950's from Europe. This parasite penetrates the head and spinal cartilage of young trout. This causes the fish to swim erratically (whirl), and have difficulty feeding and avoiding predators. In severe infections, the disease can cause high rates of mortality in young-of-the-year fish. Those that survive until the cartilage hardens to bone can live a normal life span, but are marred by skeletal deformities. Fish can, however reproduce without passing on the parasite to their offspring. The spores can be transported by animals, birds and humans. The most likely means of the parasite's expansion is the illegal transportation of live fish.

Laws and Regulations

The Alaska National Interest Lands Conservation Act (ANILCA) directs the Togiak National Wildlife Refuge to conserve fish and wildlife populations and habitats in their natural diversity. The Togiak Refuge Fisheries Management Plan identified a "wild" management concept, emphasizing natural reproduction and natural habitat conditions. The Southwest Alaska Rainbow Trout Management Plan adopted a management policy to maintain historical size and age distribution of rainbow trout populations in the region. Togiak Refuge management also reflects the goals of the National Recreational Fisheries Policy. It will protect fish populations and their habitats by monitoring and evaluating the effects of public use in sensitive areas. This will also ensure the quality, quantity, and diversity of opportunities for recreational fishing are maintained.

ADF&G has management responsibility for fisheries in navigable waters and includes a State mandated management priority for subsistence uses. The State Division of

Commercial Fisheries Management and Development manages the commercial fisheries and monitors subsistence harvest in coordination with the Subsistence Division from the Bethel and Dillingham offices. The Division of Sport Fish manages the sport fisheries from the Dillingham office, with frequent communication with the Subsistence Division and commercial fisheries personnel in Bethel.

The general management strategy within the waters of the Togiak Refuge has been to promote catch-and-release fishing for resident and anadromous fish species in waters outside the ADF&G special regulation management areas. ADF&G sport fish special fishing regulations require releasing all Kanektok River rainbow trout from June 8 to October 31. Additionally, ADF&G regulations specify only single-hook unbaited artificial lures may be used in the waters of the Goodnews and Kanektok rivers, to minimize hooking mortality. Other length and possession limits vary by location.

Angler education has been recognized by both ADF&G and Service managers as the best method to successfully implement catch-and-release fishing and minimize mortality. Education of anglers by Togiak Refuge personnel is initiated during airport contacts for unguided floater trips and by the Togiak Refuge ranger program contacting groups in the field. A brochure is included in Togiak Refuge information packets sent to interested parties inquiring about the Togiak Refuge. As part of the guide permitting process, guides are required to brief all clients on proper catch and release methods. Information provided to visitors also includes the sensitivity of catch-and-release practices to local residents.

The Service has been recently charged with management of subsistence fisheries in waters flowing from the Togiak Refuge. This new management responsibility is being coordinated with the State of Alaska through a formal Interim Memorandum of Agreement. The purpose of this memorandum is to provide a foundation and direction for coordinated interagency subsistence fisheries and wildlife management, consistent with State and Federal statutes, that will protect and promote the sustained health of fish and wildlife populations, ensure conservation and stability in fisheries and wildlife management, and include meaningful public involvement.

Current Management/Available Data

As part of the Togiak Refuge Public Use Management Plan (PUMP), the Refuge was divided into 13 management units. These units are formed loosely along major watershed boundaries to recognize unique and distinct differences among the resources and use of these areas. Unit 13 includes all of the lakes within the Togiak Wilderness Area.

The ADF&G Sport Fish Division's mail survey is the primary tool used to monitor refuge sport fisheries. In addition, on-site creel and fishery survey projects are conducted periodically on the most active sport fisheries such as the Lower Kanektok, North Fork Goodnews and Togiak Rivers during the peaks of chinook and coho salmon runs. Public use data and fish catch and harvest data are collected three ways: air taxi permits, sport fishing guide permits, and the Togiak Refuge river ranger program.

The level of non-guided use (angling effort) is estimated by trip reports required to be completed by each group using an air taxi service to access the Togiak Refuge. These reports provide the number of people in the group, the days spent on the river, and the drop off and pick up locations. No fish catch or harvest information is required. Sport fishing guides report the number of clients fishing in a particular area, the number of hours fished, and the number of each species caught and kept. For smaller fisheries and tributary streams, guide use reports provide the only estimate of the level of guided effort, catch rates and harvest.

The Togiak Refuge river rangers collect information on all recreational and subsistence activities occurring in the Kanektok, Goodnews and Togiak river drainages. The information provides "use days" which include anglers and the number of guides and clients.

There is extensive fisheries data related to catch, escapement, harvest, habitat, migration, age, numbers, etc. for parts of the Togiak Refuge. For other parts, there is very little data. In general, the data currently available indicate that fish stocks within the Togiak Refuge are healthy, and should be able to sustain the current levels of harvest by commercial, subsistence, and sport fisheries.

Effects of Catch and Release. Catch and release fishing has been generally accepted as a fisheries management tool that provides opportunity for sport fishing while conserving fish populations. The main objectives behind catch and release fishing regulations are to minimize fish mortality, maintain catch rates, and conserve larger fish. In some fisheries, an individual fish may be caught and released several times throughout its life, supporting a recreational fishery while still going on to reproduce and provide for future generations.

The percentage of mortality caused by catch and release fishing depends on numerous factors: fish species; the type of lure, area of mouth region the fish is hooked; length of time between hooking and release; water temperature; size of the fish; if the fish is removed from the water and for how long; and general care in handling the fish. With proper catch and release method, fish mortality and population effects can be minimized.

The available literature suggests that mortality associated catch and release fishing can range from about 3 to 12 % for a variety of fish species. It is thought that with the use of proper catch and release methods, most fish mortality can be held to below 3% for most sport fish species on the Togiak Refuge. However, increased use of the fish resources within the Togiak Refuge could increase levels of fish mortality. To address the long term effects of catch and release fishing at a population level, monitoring of fish populations with standardized methods of sampling should be implemented.

Risk of Introduced Disease. Rainbow trout appear to be most susceptible to whirling disease infection. Other species that can be effected to a lesser degree are sockeye, chinook and coho salmon. Lake trout may be immune to the disease. As part of the U.S. Fish and Wildlife Service Division of Fish Hatcheries' National Wild Fish Health Survey, the King Salmon Fishery Resource Office collected tissue samples from ten rainbow trout populations, two Dolly Varden populations, and one Arctic char population throughout southwest Alaska during May-October 1998 to test for specific diseases and parasites. Rainbow trout were collected from the Kanektok and Togiak River drainages. Dolly Varden and Arctic char were collected from the Togiak drainage.

All tests for *Myxobolus cerebralis* (whirling disease) were negative. Other bacterial pathogens tested for were all found at or below normal levels or were nonexistent. Rainbow trout that spawn in cold water temperatures (less than 50 degrees F) are less susceptible to the detrimental effects of whirling disease.

Currently there is an effort in the state of Alaska to control the transportation of whirling disease to state waters. It is illegal to transport live fish to the state from other areas or to transport fish between drainages within the State. No salmonids are imported to the state and no stocking programs are occurring in southwest Alaska. It is currently felt that the likelihood of enough viable spores being transported to Alaska is very low. Geographic isolation is advantageous in reducing straying and likelihood of illegal stocking. It is also not known whether a suitable tubifex worm intermediate host is available in Alaska.

Togiak Refuge is in the final stages of completing a web site which will include preventative measures anglers can take to minimize the risk of transporting viable spores and tubifex worms to this area. Similar information is disseminated to air taxi operators and their clients as part of the Refuge visitor airport contacts. The primary preventive measures suggested are adapted from the Whirling Disease Foundation, Inc. web site, such as how to disinfect boots, waders, and gear before going to a new watershed. Researchers have found that disinfectant like chlorine and high temperatures can destroy the spores.

Populations of Concern. A few specific populations of fish within the Togiak Refuge are of concern. Data have been gathered about these populations, and on-going studies will provide more information about the health of these fish stocks.

Unit 5 - Upper Togiak River. Concerns were documented in the Togiak Refuge Public Use Management Plan over the status of resident fish species and anadromous Char and the effects increasing sport fishing effort could have on these populations. Togiak residents have previously expressed concern for an apparent decline in the number and size of Char. At current levels the fisheries are not likely to be an immediate threat but their magnitude and lack of abundance information warrant very close observation of the populations. Long-time sport fish guides have expressed concern for rainbow trout and Arctic grayling populations in the Togiak drainage tributaries. The sport catch of rainbow trout has leveled off, and the sport harvest remains very low. Subsistence harvest of rainbow trout is low compared to that of char and pike. From 1997 to 1999 the Togiak Refuge tagged and released Dolly Varden along the main Togiak River to gather data about movements, age structure and growth of fish in this population. The analysis of that data has not been completed. A genetic study of spawning age Dolly Varden was begun on the Togiak River in 2000.

Unit 9 - Kanektok River. Sixty percent of the sport fishing effort on the Kanektok River occurs on the lower 20 miles. The remaining 40% of sport fishing effort occurs on the upper 73 miles. The rainbow trout population was sampled in a 20-mile section of the Kanektok River during three different studies; results suggest there may be a size shift in the population of rainbow trout from larger to smaller fish. The rainbow trout population appears to be capable of sustaining the current level of the fisheries, however, the increasing angling effort on the Kanektok River has potential to significantly affect the rainbow trout population. In 1998 the ADF&G issued more restrictive sport fishing regulations that should decrease the number of rainbow trout taken and decrease the mortality of released fish. Future studies specifically designed to assess the population abundance or effects of the sport fishery are warranted.

Unit 10 - Arolik River. Studies have found that rainbow trout in the Arolik River were larger in length at age and had a greater maximum age, maximum length, and a greater proportion of fish larger than 500 mm in length than those sampled in either the Kanektok or Goodnews rivers. The rainbow trout population appears to be very healthy and capable of sustaining the current fisheries. Increasing angling effort on the Arolik River has the potential to significantly affect the fish populations. Concern about the level of harvest has been expressed by the public and others familiar with the river. Future studies specifically designed to assess the population abundance or effects of the sport fishery are warranted.

Unit 13 - Wilderness Lakes. The availability of good rainbow trout fishing is an important attraction to sport anglers utilizing Pungokepek and Gechiak Lakes. Rainbow trout have not been found or reported at the other lakes. Togiak Refuge fisheries surveys have included the headwater lakes and the tributary streams to the Togiak River. At this time the rainbow trout population appears healthy and capable of sustaining the current fisheries. Increasing angling effort at lake outlets has potential to significantly affect fish populations. In addition people having experience with these fisheries have expressed concern for fish populations. Future studies specifically designed to assess the population abundance or effects of the sport fishery are warranted. Abundance information is not available for most lake trout populations in Unit 13. While these are slow growing, old age populations, the populations are thought to be relatively stable and able to withstand the current levels of catch and harvest. However this species is popular for both sport and subsistence use and should be monitored carefully.

Data Gaps

Baseline population statistics have been collected on many of the rivers within the Togiak Refuge. Additional information could benefit efforts to address impacts of use on spawning grounds. Studies addressing catch and release fishing mortality have been conducted on the major sport fish species found within the Togiak Refuge, but not studies addressing the effect on Refuge fish population dynamics. A standardized method of sampling would be needed in all exploited populations of fish to address the effect of catch and release fishing methods on populations throughout the Togiak Refuge.

Possible Ways to Address the Issue

Educate anglers on avoiding unnecessary impacts to fish populations (how to minimize damage to spawning areas; proper catch and release)

Research existing literature on effects of motor boat motor use in spawning areas and consider regulations

Monitor sport fishing and adjust regulations as needed

Continue to monitor fish populations

Work cooperatively with the villages to identify sensitive habitat areas (spawning beds) and submit joint proposal for protection to State Board of Fish

Subsistence Opportunities

How should the Togiak Refuge define and manage for continued subsistence opportunities? How will the Refuge know if subsistence uses are declining in quality or becoming significantly restricted? What are the main influences on subsistence on the three main river systems? How is recreational use of the three main river systems affecting subsistence?

Residents of villages associated with the Togiak Refuge practice subsistence lifestyles and rely heavily on resources located within Refuge boundaries. Local residents want to make sure that there is continued opportunity for subsistence uses as provided by ANILCA, especially fishing but also hunting, gathering, and use of private lands within the Refuge boundaries for subsistence and related uses.

Subsistence users are concerned about sport use of the Refuge, and in particular about sport angling on the Kanektok, Goodnews, and Togiak rivers. Concerns include water quality, competition for preferred fishing locations, effects of catch and release fishing practices, displacement of game from the river corridors, increased habituation of bears and attraction to food sources at subsistence camps and in the villages, safety, and trespass. Some of these concerns are also covered under other issues.

Laws and Regulations

When the Togiak National Wildlife Refuge was created by ANILCA, Congress identified one of its purposes as providing the opportunity for continued subsistence uses by local residents, in a manner consistent with conservation of fish and wildlife populations and habitats in their natural diversity, and with international treaty obligations. By law, the Refuge cannot be managed in ways that would materially interfere with or detract from subsistence opportunity. In times of resource scarcity, subsistence use receives preference over sport use.

As long as the fish and wildlife are present in sufficient populations to meet subsistence needs, and subsistence users have the opportunity to harvest them, the law is met. However, another issue is the type and character of subsistence opportunity available--in other words, the quality of subsistence--especially along the Kanektok, Togiak, and Goodnews Rivers. Tribal government representatives to the Core Planning Team suggested adding this aspect to the issue after hearing of Refuge policies designed to provide quality recreational opportunities. It makes sense also to pay attention to the quality of subsistence, even if this is not a legal mandate.

One of the main aspects of this issue is how sport use is affecting subsistence uses on the three main river corridors. In order to be allowed, other human uses of the Refuge, including recreation, must be determined to be compatible with subsistence and the other Refuge purposes. The Togiak Refuge Manager, the person responsible for determining compatibility, can place stipulations on other uses so that they remain compatible. These include limitations on the timing or place where the other uses can occur, routes or forms of access, types of equipment used, and the number of people involved.

Indicators of Subsistence Quality

What factors contribute to or detract from subsistence opportunities, and what social and resource conditions are desirable along the three main rivers? The Core Planning Team has started a list of some of these factors, many of which involve interactions with sport angling. They are called indicators because, taken together, they indicate the level of quality present.

Status and Availability of Fish and Wildlife Populations. The primary factor contributing to subsistence is the health and availability of fish populations, which is discussed in more detail under the Health of Fish issue (water quality is also discussed as its own as issue). Fish populations are currently healthy and high-quality habitat is provided on the Refuge. Fish populations are more subject to influence from commercial catch, ocean cycles, and other factors rather than anything that happens on the Togiak Refuge. However there is concern for effects of catch and release fishing on fish populations and on their use; some local residents will not use fish that have obviously been caught and released. Another concern is the potential for displacement of wildlife in the river corridors, and the effects on bears of repeated contact with humans. This is also discussed as a separate issue.

Access to Preferred and Traditional Fishing Areas. Subsistence users have preferred and traditional locations where they use set nets to catch fish on the rivers. When a sport group is camped at those locations or is actively fishing there, these sites are not available for subsistence use, and can result in the displacement of subsistence users. The Refuge staff has identified 18 "fishing holes" on the Upper Togiak River which correspond very closely with the 24 subsistence net sites. Residents of Quinhagak have identified 51 traditional use sites ("fish camps, hunting camps, and other locations") along the Kanektok River (Wolfe 1987). Twenty-nine of these sites are located upstream from the wilderness boundary.

Conflicts over public use of the Goodnews River related to subsistence are not documented as specifically as for the Togiak and Kanektok rivers, but appear to be similar,

focusing on fishing sites. The lower rivers appear to be the areas of most conflict because subsistence fishing is greatest closer to the communities. The extent or frequency of this impact has not been measured.

Trespass. Trespass on private lands remains a concern on all three rivers, especially on lands outside the Togiak Wilderness. River ranger data do not provide a complete picture, but suggest that the largest problems are on the non-wilderness portions of the Goodnews and the Kanektok, and that existing methods of dealing with the issue have not been as effective as possible. This indicator relates not just to subsistence quality, but to effects of sport use on private lands and existing regulations.

Conflicts with sport anglers. River ranger reports include notation of discourteous behavior and complaints about crowding. Although these are not measured specifically to detect conflicts between local and non-local users, there could be some relationship. There appears to be a downward trend in these indicators. Coupled with anecdotal information, it appears that direct, onsite conflicts between sport and subsistence users have diminished, and that there is more of an attitude of acceptance of both types of uses on the rivers. On the Kanektok, this may be attributable to efforts of villagers to visit some of the sport camps through the cultural program instituted a couple of years ago. Guides who operate on the rivers under permit to the Refuge are aware of the issue and have attempted to be good neighbors.

The nature and number of conflicts is very poorly documented. Some of these conflicts are based on displacement as noted above, while some stem from basic cultural or social values differences, such as the local negative view of catch and release fishing, apart from any on-the-ground impacts to subsistence uses. Some subsistence users will not keep fish that appear to have been caught and released. Revision of the plan will not resolve the cultural differences but could further attempts to reduce actual conflicts over them. It is interesting to note that disapproval or at least questioning of catch-and-release practices has begun to appear among sport anglers as well.

Litter and Waste in the River Corridor. One of the indicators of a quality subsistence opportunity is an environment that is not littered or that shows other evidence of past careless use. As part of their duties, river rangers record evidence of litter and human waste (as well as cleaning it up where possible). These data bounce around quite a bit, with no upward or downward trend evident. However, local perceptions are that litter and waste from all river uses have decreased over the years.

Opportunity for a Safe Experience. Subsistence users expect a safe experience on the river. One obvious indicator of safety is the number of near or actual collisions involving

motorboats. There are no data collected in any systematic manner, but it takes only one incident, such as the collision of a local boat user with a sport guiding boat on the Goodnews River in 2000, to highlight the concern and its importance. On this river especially, there is concern over the size and horsepower of some boats being used by guides.

Social Aspects of Subsistence. Sharing harvest is an important aspect of the subsistence lifestyle. However, adequate information about the importance of social variables while on the river is incomplete. For example, an important component of the recreation experience in wilderness is opportunities for solitude. Recreational visitors to the rivers do not expect to encounter large numbers of other groups, and their experience declines when they do. We do not have comparable information for subsistence users of the rivers, or other information about how social contact with locals or non-locals adds to or detracts from a day on the river for subsistence users.

Current Management

The Togiak Refuge and others who have management responsibilities in the river corridors already take many actions to protect subsistence uses. One of the main sets of actions is described in the Refuge's Public Use Management Plan (PUMP), issued in 1991, which determined that several uses were compatible with the purposes of the Togiak Refuge. Sport fishing, sport hunting, power boating, and non-motorized boating are some of those uses. The PUMP contained management direction to insure that those uses remained compatible, as well as to provide quality recreation.

River Rangers. Togiak Refuge began a river ranger program in 1991. This program has been in place on the Kanektok, Goodnews, and Togiak Rivers since that time, with the exception of 1995 and 1996 when there was no ranger program on the Togiak River. The emphasis has been on education and monitoring conditions rather than enforcement. The rangers also inventory campsites and ask visitors and locals about problems encountered on their trip. The river ranger program has been a vehicle for hiring locals. In the future, the river rangers will have law enforcement authority, in response to requests from local residents and sport visitors alike.

Airport contacts. The Togiak Refuge has a visitor contact program conducted at the Dillingham airport. The purpose is to educate people about conditions within the Refuge to reduce negative impacts to the resource and subsistence opportunities, and to address safety concerns. Handouts and the short presentation focus on bear behavior and safety, catch and release fishing, leave-no-trace camping practices, private land ownership and trespassing, and Refuge regulations.

Limits on Guided Use. Since the mid-1980s, the Togiak Refuge has limited the number of sport fishing and sport hunting businesses that are authorized to operate on the three river systems above the wilderness boundary. The permits also establish the number of clients and/or boats and camps that businesses may use.

On the Togiak River, there is a limit of 2 permits for guided floats and 4 permits for guided motorboats. On the Kanektok River, the limit is 8 permits for guides to run float trips and 2 for motorboats; guided float trips are scheduled in advance (on even or odd numbered days) to minimize the opportunities for guided parties to encounter each other. These dates are available at the Togiak Refuge office so non-guided parties can inquire and are encouraged to schedule their own trips between the guided float trips. At locations of user congestion, (such as Kagati Lake outlet) sport groups are allowed to camp only one night. On the Goodnews River, there is a limit of 3 permits for guided float trips and 2 for guided motorboats.

Fishing and Camping Regulations. Much of the management of the Kanektok, Togiak and Goodnews Rivers is determined by the State of Alaska. The use of the lands below the mean high water mark on large portions of the Goodnews, Kanektok and Togiak River drainages is managed by the Alaska Department of Natural Resources, which limits camping on state lands to 3 consecutive days at one location. This regulation helps to prevent people from camping on the best fishing holes for extended periods, making them available to more users.

The Alaska Department of Fish and Game sets hunting and fishing regulations for sport use. The general management strategy within the waters of the Togiak Refuge has been to promote catch and release fishing for resident and anadromous fish species in waters outside the ADF&G special regulation management areas. ADF&G sport fish special fishing regulation require releasing all Kanektok River rainbow trout from June 8 to October 31. Regulations specify only single-hook, unbaited artificial lures may be used in the Goodnews and Kanektok rivers.

Fishing regulations have been changed over the years to reflect concerns and issues. For example, the limits for king salmon were reduced (from 15 to 3) in response to concerns about overexploitation and the developing "meat" sport fishery. Fish that have been kept out of the water are legally considered to have been "taken" and should count toward the limit.

Much of the land within the boundary of the Togiak Refuge belongs to Native Corporations. Management of those lands is determined by the Corporations, who permit guiding businesses and camps, require fees for use of private lands, and establish other

regulations (for example, carry out of human waste is required on the Lower Kanektok). The villages have also worked hard to reduce litter and other impacts in the river corridors. In the past couple of years, the village of Quinhagak has made additional efforts to reduce conflicts between subsistence users and sport anglers through a cultural program designed to teach guided sport anglers about local culture and customs by visiting camps along the river.

Together, all of these management actions have appeared to lessen both environmental impacts and social conflicts along the rivers compared to previous levels. However, without better ways of understanding factors that affect subsistence, and how to measure them, the Togiak Refuge and others will not be able to assess whether progress in protecting subsistence uses and quality is being made.

Data Gaps

State and federal agencies do not conduct household surveys documenting subsistence use in villages with any regularity. We also need better information on subsistence quality to know how uses such as sport angling, or natural fluctuations in populations, affect subsistence, in order to better protect subsistence uses of the Refuge. The nature and extent of onsite conflicts with subsistence use are also poorly documented.

The Fish and Wildlife Service is sponsoring a study during Spring 2001 to better understand subsistence uses and quality on the rivers, and identify uses or conditions that contribute to or detract from subsistence quality. The study will identify situations that led to conflicts and the underlying reasons. The study may also identify additional indicators that the Togiak Refuge could measure to monitor subsistence quality. The study also will compare conflicts on the Refuge rivers with those present between subsistence and other uses in Finland, adding a cross-cultural dimension.

Possible Ways to Address the Issue

Conduct research to better identify the social and resource characteristics of the river corridors that contribute to and detract from subsistence opportunity and monitor these conditions over time

Change/improve information on private lands provided by river rangers

Increase enforcement of existing regulations

Regulate non-guided use (limit use on Upper Kanektok River and Upper Goodnews River;

mandatory registration for float groups on these same two river segments). The Core Team agreed that limits on the level of non-guided use would be one option considered and evaluated as part of the planning process

Mark important subsistence camps and private property to minimize trespass

Continue to teach anglers proper catch-and-release fish, to avoid excessive playing with fish, to use proper equipment such as strong line.

Support Quinhagak cultural program visits to sport fish camps as one way to inform non-local anglers about local culture and customs

Limit the horsepower for guided boats on the Goodnews River

Formalize the indicators of subsistence quality and standards and then monitor them over time, taking action as needed to prevent standards from being exceeded.

Recreation Quality

How do visitors and the Togiak Refuge define a high quality recreational experience, and is that experience being provided on the Refuge? What resource and social conditions are desirable to provide high quality experiences, and what are the threats to recreational opportunities? What should the Refuge's role be in defining and managing for quality experiences on the Kanektok, Goodnews, and Togiak rivers?

ANILCA and the Refuge System Improvement Act of 1997 direct the Togiak Refuge to provide and facilitate wildlife-dependent recreational opportunities that are compatible with Refuge purposes.

The Wilderness Act says that the Wilderness portion of the Togiak Refuge must be managed to provide solitude and a primitive and unconfined type of recreation, where the land is affected mainly by the forces of nature and the imprint of man's work is substantially unnoticeable. Under ANILCA, wilderness areas in Alaska are living, working places where many types of motorized access methods and related uses will continue to occur. However, the basic principles and philosophy of wilderness still apply to managing recreation.

Refuge managers are directed to manage for high quality wildlife dependent recreation opportunities. Agency policies define what is meant by a quality experience. For example, a quality fishing experience: contributes to management objectives; maximizes safety for anglers and other visitors; causes no adverse impact on populations of resident or migratory species, native species, threatened and endangered species, or habitat; encourages the highest standards of ethical behavior in regards to catching, attempting to catch, and releasing fish; is available to a broad spectrum of the public that visits, or potentially would visit, the refuge; provides reasonable accommodations for individuals with disabilities to participate in refuge fishing activities; reflects positively on the System; provides uncrowded conditions; creates minimal conflict with other priority wildlife-dependent recreational uses or refuge operation; provides reasonable challenge and harvest opportunity; and increases participants understanding and appreciation for the fisheries resource.

This issue overlaps with many aspects of the previous issues because sport anglers have many of the same values and concerns as local residents. Crowded conditions, for instance, are undesirable to everyone who uses the rivers, and all users highly value clean water and

healthy fish populations. An additional dimension of this issue is equity; currently guided users are limited in a number of ways, while non-guided use does not have comparable limits.

Trends in recreation use patterns

The main use of the Togiak Refuge for recreation, and the one around which this issue centers, is sport fishing, primarily on the three main river systems and their tributaries. Use on the rest of the Refuge is either covered under another issue or will be considered in the plan revision, but not as a major planning issue.

Guided Use. Sport fishing guides and air taxis have been required to obtain special use permits from the Refuge since 1982, and the number of permits has been limited since 1986. With the exception of the Upper Goodnews River, all sport fish guiding permits are issued based on a competitive process. Permit holders are selected from proposals based on an evaluation to determine which applicants, in the judgement of the Service, are best qualified to provide services offered. In 2000, the Refuge issued 29 permits for sport fishing: 14 for float trips, 10 for motorboat trips, and 5 for fly-in day use.

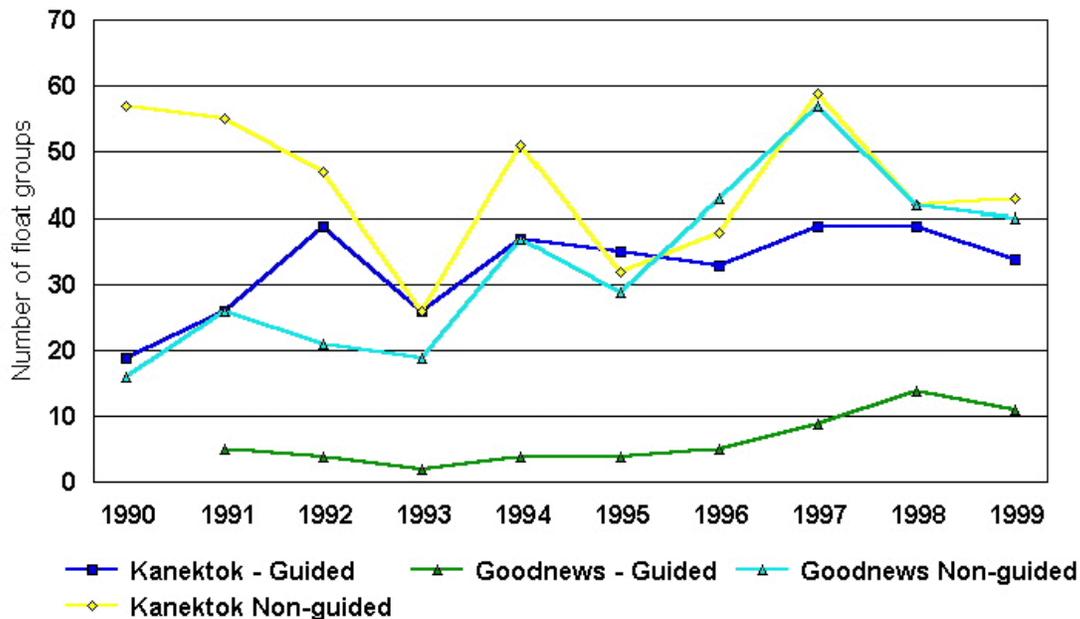
Guided use has been controlled on the Upper Kanektok River since 1986. Refuge special use permits authorized a total of 24 people in association with guided motorboat based camps. Refuge permits also allow float boat guides to start every other day with a maximum of four boats and 12 total people per start. Since 1991, about 1,100 guided angler days annually have been reported.

In the 1990s, guided motorboat use on the Upper Kanektok has been relatively constant with the exception of years when one of two motorboat base camp guides had little to no use. Use of the Lower Kanektok River has fluctuated. Two additional motorboat guide camps were established on the lower river between 1987 and 1997. Approximately 20-30 percent of the non-guided use takes place in the lower river below the wilderness boundary during the king and coho salmon fisheries. The remainder 70-80 percent of visitors are floating from Kagati Lake to the airstrip at Quinhagak and most of their time is spent in the upper river.

Lower Goodnews River use has remained relatively constant. Guided motorboat use on the Upper Goodnews River is much lower, and increases seen in 1995 and 1996 are still very low when compare to past use of 1,460 authorized client use days.

The table Trends in Number of Float Groups per Year compares guided to non-guided float use for the stretches of river receiving most of the float use on the Refuge. Guided use shows more consistency from year to year, given the limits on special use permits, while non-guided use fluctuates and shows a general increase, especially on the Goodnews. Non-guided float use on the Goodnews now equals non-guided use on the Kanektok.

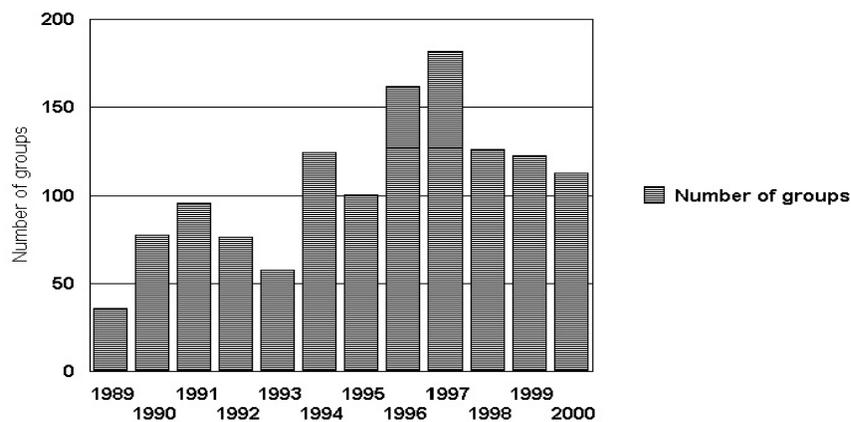
Trends in Number of Float Groups Per Year



Non-guided Use. Non-guided use is not limited. There has been a substantial increase in the number of non-guided sport fishing float groups on the Kanektok and Goodnews rivers since the 1991 Public Use Management Plan (PUMP) was completed, although use has leveled off the past few years (see following table, Trends in Air Taxi Use; this table contains only air taxi use by non-guided visitors). The surge of use in 1997 is likely attributable to the low water that year, and the accompanying abundance of catchable rainbows. Use on the Togiak has not increased and remains low overall.

The PUMP states that long-term management on the wilderness portions of the three rivers would be directed toward an allocation of 50 percent guided and 50 percent non-guided use or, at least, river management would be revisited when the 50/50 split was reached. The PUMP did not define where or how this use was to be measured. Current data suggest that non-guided float use has exceeded guided float use levels on the Kanektok and Upper Goodnews rivers, with peak use focused during the chinook and coho salmon runs.

Trends in Air Taxi Use



Indicators of Recreation Quality

Much of the information on quality from the visitors' perspective comes from a survey of sport users conducted for the Refuge during the 1995 use season. On average, visitors thought the upper segments of the rivers provided and should provide "primitive" experiences where "one can expect to find solitude and few traces of previous use or development." In contrast, they thought the lower segment of these rivers provided and should provide more "semi-primitive" experiences where "one expects to meet a few other groups, but where solitude is still possible," and traces of previous use or development levels are higher.

When asked about their reasons for wanting to visit one of the three rivers, three types of reasons were important: (1) wilderness reasons such as being in a natural place and opportunities for solitude and viewing scenery; (2) fishing opportunities and (3) opportunities to interact with friends or family.

Fishing Quality. Visitors were asked to rate the quality of fishing for different species on the rivers. The highest quality was for Dolly Varden or char, coho salmon, chinook salmon, and rainbow trout fishing. Specific comments from respondents suggest that fishing for all these species can be excellent, but several suggest that there may be a decline in fishing quality for rainbow trout on the Kanektok. Visitors in 1995 were asked to rate the quality of fishing by species on a scale of 1 to 5 with 5 being excellent:

| River | Rainbow trout | Char/Dolly Varden | Chinook salmon | Coho salmon |
|----------|---------------|-------------------|----------------|-------------|
| Goodnews | 3.6 | 4.0 | 3.9 | 4.1 |
| Kanektok | 3.2 | 4.1 | 3.4 | 4.1 |
| Togiak | 3.7 | 3.5 | 4.7 | 4.4 |

Competition for fishing locations is another indicator of quality. Among the survey respondents, there was a strong agreement that having to pass by a fishing area more than 10 percent of the time because it is occupied would be unacceptable. This is consistent with other interaction standards. Visitors see these rivers as providing fairly primitive experiences where competition for fishing areas should be minimal. A relatively significant number of visitors report more fishing competition than expected on the Kanektok (26 percent), but less than 10 percent reporting this problem on the Goodnews or Togiak rivers.

Solitude (number and type of groups encountered; perceptions of crowding). Less than 25 percent of the respondents encountered more float groups than they expected, particularly on the headwater lakes of the Kanektok and Goodnews. However, 45 percent saw more than they expected on the Lower Kanektok, where densities appear to be higher than many visitors expected. These results are consistent with a considerable number of other studies exploring standards in backcountry or wilderness settings where standards are typically less than four group encounters per day.

Recreational river users largely agreed on how many other float parties they could see per day before their trip was compromised. About one-third to one-quarter of respondents did not name a standard for the encounter impact, although very few said this impact "does not matter". Data suggests that impact levels for float encounters per day should be less than two or three on the lakes and upper rivers, and less than four or five on the

lower rivers. Managers can pinpoint sections of river where the greatest problems may exist, such as the large proportion of visitors whose encounter standards were exceeded on the Lower Kanektok (**See table below**).

Comparison of encounter standards with reported impact levels (float groups)¹

| River: | % who saw less than their standard | % who saw the same as their standard | % who saw more than their standard |
|----------------|------------------------------------|--------------------------------------|------------------------------------|
| Upper Kanektok | 32 | 44 | 24 |
| Lower Kanektok | 31 | 24 | 45 |
| Upper Goodnews | 43 | 45 | 13 |
| Lower Goodnews | 32 | 42 | 26 |
| Upper Togiak | 47 | 37 | 16 |
| Lower Togiak | 43 | 35 | 22 |

The findings were similar for encounters with motorboats. People agreed that encounter rates should be low on the upper rivers (one per day or less) and less than 3-5 per day on the lower rivers. Floaters and non-floaters had similar standards for the lower rivers, but different standards for the upper rivers, where floaters preferred not to see any motorboats but motorboat users had a standard of 3-5 encounters per day. Visitors reported encountering more motorboats than their standard especially on the Lower Kanektok. However, written responses on the survey suggested that people understood the need for locals' use of motorboats on the rivers as a means of transportation.

Comparison of encounter standards with reported impact levels (motorboat groups)

¹ The Upper portion of each river refers to the segment upstream from the Togiak Wilderness boundary.

| River: | % who saw less than their standard | % who saw the same as their standard | % who saw more than their standard |
|----------------|------------------------------------|--------------------------------------|------------------------------------|
| Upper Kanektok | 18 | 52 | 30 |
| Lower Kanektok | 19 | 26 | 55 |
| Upper Goodnews | 16 | 72 | 12 |
| Lower Goodnews | 22 | 41 | 37 |
| Upper Togiak | 62 | 29 | 9 |
| Lower Togiak | 33 | 33 | 33 |

Most float groups perceive motorized use as an impact, while most motorized users do not perceive rafts as an impact. Rafters often stated that they do not agree with motorized use in the wilderness. Because this issue is deeply rooted in individual philosophy about wilderness, it will most likely never be resolved, especially in Alaska where motorized access is a way of life and firmly supported by law. Most complaints about motorized boats are about improper river etiquette, boat speed, size, and the amount of wake.

Camp encounters (percent of nights camping within sight or sound of other camps).

Recreation visitors said that camping within sight or sound of other groups more than 10% of the time would not be acceptable, a standard consistent with that found in other backcountry settings. Relatively few users experienced more camp encounters than was acceptable.

Amount of time within sight of other groups. Visitors who answered this question stated that being within sight or sound of another group more than 10% of the time would exceed their standard. Results indicate that this standard is being exceeded on the Kanektok River.

Percent of camping areas passed because they were occupied. About 20 percent of the Kanektok visitors report more camping competition than expected or tolerated, with much lower percentages for the Goodnews. Significance tests, however, suggest that camping competition is not an impact problem at this time.

Number of permanent and semi-permanent tent camps. People indicated that their

standard for the Upper Kanektok and Goodnews were less than 1 camp, but that 5-8 camps on the Lower Kanektok and 2-4 on the Lower Goodnews would be acceptable. Visitors reported that less than 3 camps on the Upper Togiak and 2-4 on the Lower Togiak would be acceptable. Most of the visitors to the Goodnews and Togiak Rivers reported that they saw fewer tent camps than expected. Fourteen percent of the people surveyed on the Kanektok reported seeing more camps than they expected on the upper portion of the river, and 41% reported seeing more camps than they expected on the lower portion.

Percent of sites with litter and human waste. Survey respondents reported seeing more litter and human waste than they were willing to tolerate on the Kanektok and Goodnews Rivers. On the Togiak very few people saw more litter or human waste than they expected. Standards for signs of human waste was 0; people said any evidence was not acceptable. As part of the river ranger program, rangers inventory campsites along the three rivers. Each inventory includes information about the number of fire rings, the presence and amount of trash, and the presence of visible human waste. This information has been collected since 1996. The percent of sites with litter has decreased on the Goodnews and Kanektok. The percent of sites with fire rings has decreased on the Goodnews. There are no apparent trends for any of the other indicators, but Togiak Refuge staff suggested that the situation is generally improving.

Data Gaps

The main information we have about visitors' perceptions of recreational quality comes from the 1995 study. A follow-up to that initial study is necessary to assess any changes in visitor experiences and opinions over the past 5 years, as well as allow for additional questions that provide information to help revise the plan. A replication and extension of the 1995 survey is scheduled to take place during the 2001 use season. This will allow assessment of trends and a re-evaluation of both indicators and standards. Information gathered by the river rangers about campsite conditions is useful, but has not been standardized.

Possible Ways to Address the Issue

Consistent with ANILCA and the Togiak Refuge purposes, ensure that recreational uses are compatible with subsistence opportunities

Conduct another survey of sport anglers during summer, 2001, to replicate and extend the 1995 survey and assess trends in quality.

Regulate non-guided use (limit use on Upper Kanektok River and Upper Goodnews River; mandatory registration for float groups on these same two river segments). The Core Team agreed that limits on the level of non-guided use would be one option considered and evaluated as part of the planning process.

Continue to teach/require leave-no-trace practices

Conduct more systematic monitoring of campsites to detect changes over time

"Harden" some campsites to reduce impacts of use

Require float parties to carry out solid human waste; work with villages to ensure proper disposal sites were available (perhaps with user fee)

Separate float groups better (such as with the staggered launch dates used for guided float trips)

Improve enforcement of existing laws and regulations

Regulate size of motors or speed of boats for safety and to reduce impacts

Keep some areas closed to guided use

Assign campsites and/or provide better map of desirable campsites

Identify recreation experience and resource condition goals for each management unit

Work with guides to voluntarily reduce motorboat use on upper rivers (such as the number of trips each boat makes up and down river in a day of fishing)

Work with all users to improve motorboat etiquette

Mandatory registration for unguided users, with feedback on requested dates so users could voluntarily pick a less-crowded time

Work with landowners along the lower rivers to study crowding and explore possible solutions

Consider the pros and cons of Wild and Scenic River designation to address the issues

Formalize the indicators of recreation quality and standards and then monitor them over time, taking action as needed to prevent standards from being exceeded.

Consider the spectrum of opportunities that could be provided across all rivers; treating the rivers as a system may suggest new possibilities for management that people could understand and appreciate, as opposed to developing direction for each river individually

Impacts of Public Use on Wildlife in the River Corridors

Under what conditions are game species displaced from river corridors during hunting season? What can the Togiak Refuge do to minimize effects on subsistence hunting? Under what conditions are bears attracted to human camps along the rivers? What can the Refuge do to minimize the effects of bears on fish camps and villages, and on recreational visitors?

This issue has two parts: displacement of subsistence game species from the river corridors; and human-bear interactions that can affect the safety of both bears and people.

Game Displacement

Locals have expressed concern over displacement of game, especially moose, from the river corridors as a potential result of increased recreational use. Game displaced from the river corridors are more difficult for local residents to obtain. State planners have found that this is a common concern for residents across the state.

Wildlife disturbance can occur in a variety of ways and many of the responses of animals to disturbance are short-lived. However, immediate responses to disturbance can become longer lasting or result in behavioral changes such as abandonment of disturbed areas. Human disturbance can also reduce available critical habitat or reduce food availability causing changes in distribution and/or abundance. Disturbance can also reduce the vigor of individuals and ultimately result in death. Elevated heart rates, energy expended in disturbance flights, and reduction of energy input all increase energy expenditures or decrease energy input which may reduce the overall health of the individual.

For example, Caribou can adapt more readily to infrequent, regularly spaced traffic than infrequent and irregular traffic, and ungulates in general are more readily able to adapt or habituate to disturbances if they are resident in the area rather than only seasonally or during migration. Substantial human activity late into fall can restrict feeding by non-habituated adult brown bears. Bears exposed to higher human activity at salmon streams also have shifted their activity patterns from feeding uniformly throughout the day to a dusk and dawn pattern, with some abandoning daylight use of the river completely. Outboard powered boats and rafts have been shown to be particularly disruptive to bears. Impacts on other species, such as moose, have not been extensively studied.

Current Management. It is known that motorized vehicles ,such as boats and snow machines, and non-motorized vehicles, such as rafts, disturb and displace wildlife along river corridors in the Togiak Refuge. However, it is not know at what level of use these activities have a significant impact upon the resource.

Regulations in place restrict human activities near wildlife. These include state hunting regulations, federal laws, and conditions of special use permits which are issued to commercial outfitters who operate within the Togiak Refuge. Under the Airborne Hunting Act, it is prohibited to knowingly participate in using an aircraft to harass any bird, fish, or other animal. Under year 2000 hunting regulations it is lawful, in the units which include the Togiak Refuge, to take game by any means, however, a person cannot drive or molest game with any motorized vehicle such as aircraft, snow machine, motor boat, etc. or use a helicopter for hunting.

As part of the special conditions for guide permits on the Togiak Refuge, fixed-wing aircraft, motor boats, and snow machines (during adequate periods of snow cover) are permitted in Refuge areas designated as part of the National Wilderness Preservation System; all other motorized equipment is prohibited. The discharge of firearms, fireworks or other explosive devices is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property. No wildlife species can be baited, harassed, or approached closely enough to disrupt the animal's natural activity or to endanger human life, except as part of a legal and authorized hunt for big game. The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for take off and landing, maintain a minimum altitude of 2,000 feet above ground level.

Traditionally, the Togiak Refuge has not exercised its full authority to enforce laws and regulations which relate to wildlife displacement and disturbance. In the past few years the Refuge has begun to more actively enforce these regulations and to prosecute violators. In the past there have been proposals to study wildlife displacement within the Refuge.

Bear-Human Interactions

Brown bears are commonly observed throughout the Togiak Refuge. They are seasonally abundant along salmon spawning areas, particularly along tributaries of the Togiak, Kulukak, Goodnews, and Kanektok Rivers. Encounters between bears and sport fishers are common in these areas. The Togiak Refuge supports a brown bear population which relies

upon salmon runs during the summer. The majority of visitor use on the Refuge also occurs during the salmon fishing season increasing the probability of bear-human interactions. Chronic bear-human problems are of concern to the Togiak Refuge because they can lead to unnecessary bear mortality through Defense of Life or Property (DLP) kills, and present a risk to human safety. Local residents report that sightings of bears in the villages have increased. There is not a good estimate of the bear population on the Refuge; if the population is increasing, that could be another reason for increased sightings and bear-human incidents.

Poor management of food, garbage, and harvested fish and game provides bears opportunities to learn to associate people with a source of food, i.e. food-conditioning. Reducing opportunities for bears to become food-conditioned can reduce the likelihood of food related DLP kills because bears appear to require a progression of several encounters before learning to aggressively seek food from people. Habituation increases the probability of food conditioning and habituated or food-conditioned brown bears are those most often involved in injury or death to human recreationists.

At a meeting in Quinhagak, it was pointed out that when bears are disturbed, the big bears displace the smaller ones, so the subadults get into trouble in town. This problem is worse when it happens in the fall, when bears will take more chances anyway to bulk up for the winter.

Under most circumstances, bears flee upon detecting human activity. Since the river ranger program began in 1991, several bear incidents have been documented, and they appear to be increasing. Many of these incidents occur at or near campsites or lodge facilities. On occasion bears have been wounded or killed as a result of these incidents. As many as 8 bears in one year have been taken in defense of life and property on the Togiak River alone in recent years.

Current Management. All visitors contacted by Togiak Refuge personnel are informed of the possibility of bear encounters. They are given a brochure titled "Bear Facts" (available at the Refuge office) describing how to avoid encounters and what to do if an encounter does occur. As a condition of their special use permit, guides operating on the Refuge are not allowed to bury waste on Refuge lands; all combustible waste may be burned and all non-combustible waste materials must be removed at the end of the permit period. Any problems with wildlife (bear or other species), including an animal taken in defense of life or property, must be reported immediately to the Refuge Manager. River rangers record bear incidents that are reported and provide additional advice or assistance to people on

the rivers.

Permittees and others must also follow Alaska Department of Fish and Game procedures if wildlife is taken in defense of life or property. As part of a brown bear management plan developed several years ago, the State increased the limit from one bear every four seasons to one per season.

Data Gaps

Acceptable levels and timing of use to minimize displacement. Brown bear population status and areas of potential conflict

Possible Ways to Address the Issue

Increased education of proper food handling and storage techniques to minimize encounters and habituation

Increase enforcement of existing regulations

Limit people in sensitive wildlife areas

Provide electric fences at fish camps, fish racks, popular camp sites

Request State to liberalize bear hunting regulations; permit more bear hunt guiding

Make sure local residents are aware of past increases in hunting limits for brown bear

Require recreational river users to take additional measures (such as using bear-proof containers for food)

Monitor and document the extent and timing of the problem; if needed, consider changes in special use permits or proposals to State to alter seasons or timing of sport use to reduce game displacement, conflicts with subsistence use, and bear-human conflicts

Make hunting season/limit more liberal (as in Units 17/18) to reduce abundance

Management of Human Use and Wildlife at Cape Peirce

How can the Togiak Refuge protect marine mammals and other species which depend on Cape Peirce, while providing opportunities for public use?

At least two hundred and eighty species of resident and migratory wildlife are believed to occur on or adjacent the Refuge, including 17 marine mammal species. This list includes Gray whale, Sei whale, Minke whale, Beluga whale, Goosebeak whale, Killer whale, Pacific White-sided dolphin, Harbor porpoise, Dall's porpoise, Northern fur seal, Steller sea lion, Pacific walrus, harbor seal, Spotted Seal, Ribbon seal, Ringed seal, and Bearded seal.

Marine mammal species regularly found throughout the Cape Peirce area are Pacific walrus, Harbor Seal, Spotted Seal, Steller sea lion, and Gray whale. The Cape Newenham/Cape Peirce area also supports the largest mainland seabird colonies in the Bearing Sea. Marine mammals have always been a significant component of the marine fauna of Alaska, and they have been a cornerstone for support for coastal peoples as far back as archaeological evidence allows us to delve. Marine mammals continue to be a major source of food and income for coastal residents of Alaska.

Protection of other species at Cape Peirce is also a concern. Seabird colonies on the cliffs are sensitive to disturbance. Black-legged kittiwake production is low in most years, so those populations may be more vulnerable, as are some shorebirds who may travel 600-700 miles before reaching shore. Waterfowl including Black Brant use adjacent areas in Chagvan Bay (a state game sanctuary).

Laws and Regulations

The Marine Mammal Protection Act prohibits the harassment or disturbance of marine mammals. The authority to enforcement of the Marine Mammals Protection Act belongs to the USFWS, National Marine Fisheries Service, and ADF&G. The USFWS enforces this act only as it pertains to polar bears, sea otters and walrus. Of these, only walrus occur on Togiak Refuge. Passage of the Marine Mammal Protection Act in 1972 prohibits the harvest of walrus by non-Natives regardless of the nature of their past dependence on them. The hunting of walrus by Natives is not regulated. They are prohibited from selling to non-Natives unless raw walrus materials is made into items of handicraft. Currently, there is no law prohibiting removal of ivory from tidelands along the Togiak Refuge, which attracts some people to the beaches where they could disturb hauled out walrus.

Concern that the decline in the number of walrus hauling out might be related to the initiation of the yellow-fin sole fishery resulted in the North Pacific Fisheries Management Council's decision to restrict the activities of the yellow-fin sole fishery. In August of 1991 the Council voted to continue indefinitely the 12-mile closure around Cape Peirce and Round Island with a three mile transit zone around Right Hand Point. The USFWS has verbal agreements with the North Pacific Fisheries Management Council, and ADF&G to continue monitoring the walrus at Cape Peirce as part of the effort to assess the effects of the fishery.

Available Data

The objective of the Togiak National Wildlife Refuge's marine mammal inventory and monitoring programs is to estimate the abundance, haulout use, and production of marine mammals on the Togiak Refuge, southern Kuskokwim Bay, and northern Bristol Bay. The main tasks are to estimate the daily number of walrus at Cape Peirce and Cape Newenham, estimate the daily number of Harbor seals and Spotted seals at Cape Peirce, estimate the number of Stellar sea lions at Cape Newenham as time permits, and document behavioral responses of marine mammals to aircraft, subsistence, and visitor use.

Pacific walrus. Walrus counts from 1981 through 2000 show a high degree of variability and no apparent trends. The peak counts occur in the summer months. The Pacific walrus population has remained relatively stable during this time frame and can not be used to explain this variability. The issue is complicated by not understanding the dynamics between the U.S. and Russian terrestrial walrus haulouts.

Cape Peirce is one of only two regularly used terrestrial haulouts for walrus in the United States (Round Island is the other). Perhaps of greatest significance is the fact that all areas used regularly by large numbers of walrus are located where the animals are not subjected to frequent and regular disturbances.

Although data are inadequate to estimate rates of mortality due to predation, the impact is probably slight in comparison to other causes of death. The major known source of mortality is hunting by humans. Not all walrus killed during hunting are retrieved; it is likely that the retrieved harvest represents about 60% of the total kill. Although numerous diseases and parasites have been found in walrus, few deaths can be attributed to those factors. Trauma caused by rock slides and crushing by other walrus have been identified as mortality factors at haulouts.

When large numbers of walrus are hauled out, "stampedes" may cause death or injury of numerous animals due to crushing. In addition, regular and frequent disturbances on coastal haulouts can cause abandonment of those areas. Walrus stampeding is a definite cause of mortality. Limited data from tagging and radio-tracking studies for walrus suggest that their preference for certain sites may be interrupted at least temporarily by human related disturbances. Although responses of walrus to humans are variable, they often flee haulouts in large numbers all at once in response to the sight, sound, and especially odors from humans and machines.

While hauled out, even temporary displacement may be detrimental to individuals. There is some evidence of haulouts being abandoned as a result of prolonged disturbance, but those cases must be assessed carefully because evidence also exists for changes in walrus distribution for reasons not fully understood. Any disruption of the animals' normal behavioral routine will cause additional and unnecessary expenditure of energy.

Harbor and Spotted Seals. Harbor seals and some Spotted seals haul out along the Refuge coast, with the highest concentrations at Nanvak Bay (Cape Peirce) and Hagemeister Island. The number of seals hauling out in Nanvak Bay has declined since the mid 1970s, but have remained stable since 1990. Population trends examined in the Gulf of Alaska indicate a similar population decline. Limited data from Prince William Sound and the southeastern Bering Sea also suggest that since the mid 1970s Harbor seal numbers have declined.

Causes for the decline in harbor seal numbers [in Alaska] have not been identified. Possible factors that may be affecting seal numbers include direct and indirect interactions with fisheries, subsistence harvests, disease, predation, pollutants, and disturbance.

Seals are easily frightened into the water and may abandon haulout areas where they are repeatedly disturbed. Intrusions into spotted seal habitat could have long-term detrimental effects to the population or the capacity of the habitat to sustain spotted seals.

Apparently harmless activities such as recreational boating and tourism may cause repetitive disturbances that could cause seals to abandon areas they would otherwise like to use. Harbor seals off Nova Scotia, Canada, seem to have habituated to human activities near their breeding and haulout areas. In most areas, however, harbor seals have reacted to human intrusion by abandoning sites or altering their haulout patterns.

Steller Sea Lions. Cape Newenham and Round Island support the two largest Steller sea lion haulouts in northern Bristol Bay. Sea lion populations have been monitored by ADF&G staff at Round Island since the late 1970s. Monitoring sea lions at Cape Newenham by USFWS staff, with funding from NMFS, began in 1990 and continued through 1993. In 1990 the Steller sea lion was listed as a threatened species. The Steller sea lion west of Cape Suckling (eastern Prince William Sound) is currently listed as endangered, and is listed as threatened east of Cape Suckling. Steller sea lion abundance has declined by over 80% in the past 30 years in the southeastern Bering Sea.

Close approach by humans, boats, or aircraft will cause hauled-out sea lions to go into the water. Disturbances that cause stampedes on rookeries may cause trampling or abandonment of pups. Areas subjected to repeated disturbance may be permanently abandoned. Low levels of occasional disturbance may have little long-term effect.

Steller sea lions occupy terrestrial haulouts during pupping, nursing, mating, and molting, which are all potentially times of elevated stress). Consequently, acoustic or visual disturbance of animals at terrestrial haulout sites could adversely affect these and other functions, or could further decrease resistance to parasitic infection, thermoregulatory impairment, disease, and other stress factors.

Disturbance of marine mammals

Continued sensitivity to human disturbances has been linked to both short-term and long-term haulout abandonments. Disturbances to walrus, seals, and sea lions are recorded when possible at Cape Peirce and Cape Newenham with estimated values ranging from low to high level disturbances. In the 16 years that disturbances to marine mammals have been recorded at Cape Peirce and Cape Newenham, disturbances have been caused by aircraft, boats, administrative/biological work, visitors, subsistence use/hunts, and other wildlife.

Aircraft. Low-flying aircraft regularly and predictably cause hauled-out walrus to move into the water. In general, walrus are more sensitive to low-flying aircraft than high-flying aircraft, and to aircraft that were overhead as opposed to those closer to the horizon, and to abruptly changing sounds than to steady sounds.

In recent years, both float plane and wheel plane access has increased. Numerous aircraft and boats/vessels beachcomb on a continuous basis in the Cape Peirce area. Each instance

is a potential cause for a disturbance. Local float plane air taxi operators have worked to avoid marine mammal disturbances, but further steps need to be taken.

Boats. Boat or vessel noises regularly and predictably cause hauled-out walrus to move into the water. Walrus are more sensitive to fast moving boats than to slow moving boats, and show a significant response to boats passing within 400 meters

Other Disturbances. People on foot can cause disturbances if they approach too close to hauled out walrus, seals or sea lions. Increased walrus activity at Cape Peirce has led to an increase in illegal poaching and harassment there. Refuge personnel are concerned that these activities may cause walrus to abandon the haulout altogether.

Natural disturbances can also affect marine mammals. One instance of a caribou crossing from North Spit was documented that flushed all of the hauled out seals into the bay. Another disturbance is created by ravens circling above seal haulouts, scaring them and flushing them into the bay. Ravens are also suspected in some walrus disturbances after the birds landed on cliffs above the walrus, a disturbance was created, and no other disturbance was evident. Numerous other marine mammal disturbances have been caused by unknown sources.

Current Management

Management objectives for the Cape Peirce-Cape Newenham area are: 1) to protect and maintain the Pacific walrus population; 2) to provide protected haulout areas for the Pacific walrus population and minimize disturbances; 3) to provide for a subsistence take of walrus with a minimal of disturbance; and 4) to allow for continued biological studies to be conducted.

The Cape Peirce-Cape Newenham Management Plan for Togiak National Wildlife Refuge has given the following management guidelines: 1) Management is the responsibility of the USFWS; 2) Control visitor activities to minimize disturbance of walrus and other wildlife; 3) Minimize development of facilities; 4) Encourage scientific and educational studies that are compatible with the Refuge purposes.

There is virtually no public use at Cape Newenham because of the radar station located there. Permission from the Air Force is required to land a plane, plus the weather is harsh and the viewing opportunities are not as good as those at Cape Peirce. If this site is ever

abandoned, increased management of human use would be needed. In the late 1980s, levels of PCBs were measured at the base, and cleanup began. Other potential environmental problems at the site include buried asbestos. Local residents are concerned about toxics making their way into the food chain. The Bristol Bay Native Association has coordinated a biosampling program for marine mammals but getting samples out in time is a problem given lack of scheduled air service from many locations. There is interest in extending those biosampling programs to fish populations.

Management of public use has focused on the Cape Peirce area, which has been administratively designated as a wildlife viewing area. Currently, there is a limit of 6 people per day allowed at Cape Peirce. The limit was calculated based on one Beaver load of passengers because an objective was to limit the number of flights in and out of the area to reduce disturbances. This number does not include the 2-3 biological technicians that monitor marine mammal and seabird numbers in the area.

The 6 visitors per day are permitted to go to Cape Peirce on a first-come first-served-basis. Visitors are given a packet of information that they must read, agree to, and sign stating that they agree to the conditions. Demand has not yet come close to exceeding the established capacity. Almost no one who has requested a permit has been turned down. Guided use is allowed under special use permit and currently there is no limit to the number of permits available, nor any method to allocate the daily limit between guided and non-guided visitors. Requests for permits are expected to increase. Guides are required to report use levels. Problems have arisen from visitors who had not contacted the office for the permit to access Cape Peirce. During the winter of 2000, Togiak Refuge staff will take a closer look at the use and disturbance issues at Cape Peirce and update the guidelines presently in place.

Presently, biological technicians monitoring marine mammals and seabirds make the contacts when possible but it is secondary to their biological data collection. They are not able to contact every visitor and prevent wildlife disturbance. Most of the visitors simply do not know how important it is to avoid disturbances to the wildlife of the area and do not realize the cumulative effects of past people at the site.

To help eliminate some of the disturbance potential to marine mammals at Cape Peirce and Cape Newenham, the Refuge recommends that all aircraft flying over the Refuge, including the Cape Peirce and Cape Newenham area, remain 2,000 feet or more above ground level and $\frac{1}{2}$ mile horizontal from hauled out marine mammals. For boats in the area, it is recommended that they remain 3 miles offshore while transitioning through the area or at

anchor. However, these are just recommendations; at times such as during the herring fishery there may be hundreds of herring spotter planes in the area over the month.

Refuge staff also have guidelines to follow in monitoring marine mammal, seabird, waterfowl, and other bird species. They are to conduct their counts in such a way to limit the number of disturbances to marine mammals. For their counts in certain open areas they have observation towers to count from that keeps their activities and movements hidden from hauled out animals.

In the past, enforcement of regulations and management guidelines have not been the responsibility of the Togiak Refuge. Violations are documented and reported to the USFWS Marine Mammals Management Office in Anchorage, the National Marine Fisheries Service or to the Federal Aviation Administration. These disturbances are in violation of federal law under the Marine Mammals Protection Act. Unfortunately very little has been done to enforce these regulations and violators are often not prosecuted. Recently the Togiak Refuge has assumed a more active role in enforcing these laws and regulations in order to limit the amount of disturbance to marine mammals within the Togiak Refuge. The Refuge's authority to regulate water-based use is not clear.

Data Gaps

There is enough data from studies and field observations to date that we may not need any further work regarding disturbances to marine mammals at Cape Peirce. Efforts at this point should be directed at reducing disturbance to marine mammals.

Regularly scheduled aircraft into and out of the site support the Cape Newenham Long Range Radar Site staff. The potential effects of this constant air traffic on hauled out marine mammals should be further evaluated.

Possible Ways to Address the Issue

Designate the areas as wilderness

Continue to control use as needed

Establish a new seasonal position at Cape Peirce to monitor and control public use and interpret the area's resources

Consider need to limit guided use and award permits competitively

Consider regulations similar to those in place at Round Island, or at Marmot Island (both managed by the State)

Attend herring spotting meetings every year to present information about conservation of marine mammals and other species

Manage the site similar to the way some bear-viewing areas are managed

Recommend that the State prohibit removal of ivory from tidelands

Establish exclusion zone at haulouts (although usual travel patterns in the area are not a problem)

Possible New Land Management Designations

What lands, if any, should the plan recommend for designation as wilderness? Where and how would additional wilderness help the Togiak Refuge better achieve its purposes? What effects would additional wilderness designation have on human uses and administration of the Refuge? What river segments are eligible for designation as Wild and Scenic Rivers, and which, if any, should the plan recommend? How would Wild and Scenic River designation help the Refuge better achieve its purposes, and what effects would it have on human uses?

Wilderness

Draft Fish and Wildlife Service policy on wilderness management mandates conducting wilderness reviews every 15 years through the Comprehensive Conservation Planning (CCP) process and within two years of acquiring new acreage (for a new refuge or an expansion) that may qualify as wilderness. The wilderness review process has three phases: inventory, study, and recommendation. After first identifying lands and waters that meet the minimum criteria for wilderness, the resulting wilderness study areas are further evaluated to determine if they merit recommendation from the Service to the Secretary for inclusion in the Wilderness System.

ANILCA designated about half of the Togiak Refuge (2,270,000 acres) as the Togiak Wilderness. The Togiak NWR Final Plan, issued in 1986, contained a wilderness review concluding that nearly all of the remaining portion of the Refuge was suitable for consideration as wilderness. That Plan's preferred alternative recommended an additional 334,000 acres of wilderness, including the Cape Peirce/Cape Newenham area and the South and Middle Forks of the Goodnews River areas. Congress has not designated any additional wilderness on the Refuge.

Inventory. The Service has new policy direction for evaluating wilderness potential on refuge lands. Although the new direction (described below) overlaps considerably with the direction in place when the first CCP was developed, there are some differences. For example, we are no longer limited to considering only lands for which the government owns both surface and subsurface estate. If lands otherwise suitable for wilderness designation were dropped from the original proposal because the Service didn't own both the surface and the subsurface estate, then those lands are reassessed.

The inventory consists of identifying areas that meet the definition of wilderness as defined in the Wilderness Act, in accordance with the criteria below. Wilderness Study Areas are lands and waters that meet the definition of wilderness and are undergoing evaluation for recommendation for inclusion in the Wilderness System. It is clear that Congress did not wish to limit wilderness designation to only those areas judged "pristine." The area must:

- (1) Be affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable.
- (2) Have outstanding opportunities for solitude or a primitive and unconfined type of recreation.
- (3) Have at least 5,000 contiguous roadless acres or be sufficient in size as to make practicable its preservation and use in an unimpaired condition, or we could restore the wilderness character through appropriate management.
- (4) Not substantially exhibit the effects of logging, farming, grazing, or other extensive development or alteration of the landscape, or we could restore the wilderness character through appropriate management, at the time of review.
- (5) Be a roadless island; or
- (6) Contain ecological, geological, or other features of scientific, educational, scenic or historical value.

Wilderness Study. During this phase of wilderness review, we study lands qualifying for wilderness to analyze values (ecological, recreational, cultural, spiritual), resources (e.g. wildlife, water, vegetation, minerals, soils), and uses (management and public) within the area. The findings of the study help determine whether to recommend the area for designation as wilderness.

The draft EIS will contain a full range of possible recommendations for Wilderness, from no additional wilderness to all qualifying acreage. The study phase will continue through the Final EIS; information provided to the refuges and Service in the form of comments on the Draft EIS is an important part of the study process.

Recommendation. This phase does not occur until the Final EIS is published. The Regional Director notifies the Director of the Region's tentative wilderness suitability recommendations on wilderness study areas evaluated and includes a wilderness study report that presents the results of the review and a wilderness recommendation. The study report will draw from several elements of the review process, including the Plan, the Environmental Impact Statement, and the results of public participation. Following approval of the Plan, the Regional Director will transmit the additional documentation in support of the Region's wilderness recommendation to the Director for review, in preparation of the Director's recommendation to the Secretary.

In Alaska, Section 1317(c) of ANILCA provides that designation of a wilderness study area or the possibility that we may designate the lands in question as wilderness in the future, does not affect our normal administration of refuge areas. Management direction prescribed in the current comprehensive conservation plan for the Togiak Refuge will guide management of these areas.

Wild and Scenic Rivers

The Fish and Wildlife Service is required by law to explore the potential for adding rivers to the national Wild and Scenic Rivers System whenever doing a major land or water planning effort. Because there are no designated Wild and Scenic rivers on the Refuge, many people may not be familiar with them. The Kanektok was considered for possible designation in the 1980s but was not recommended, primarily because of the lack of local, state, and federal support for designation at that time..

The purpose of the Wild and Scenic Rivers Act is to identify rivers or sections of rivers and their associated lands (in Alaska, an average of $\frac{1}{2}$ mile on each side of the river) that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, ecological, or other values, and to manage these rivers in a way that protects these values for present and future generations. Congress has said that the national policy of constructing dams and other water developments needs to be balanced by a policy to keep some rivers in their free-flowing condition.

Rivers or segments of rivers can be designated (added to the system) either by an act of Congress or by the Secretary of the Interior, based on an application of the governor. To be considered eligible for designation, rivers must be free-flowing and have one or more outstanding river-related values within the river corridor. Rivers found to be eligible for addition to the system are classified as either wild, scenic, or recreational, based on the

level of development in the river corridor at the time the river is being considered for designation. Eligible rivers then go through what's called a suitability study, which results in a given river actually being recommended or not recommended for designation. The suitability outcome depends in part on public comments received. The CCP process can only result in a recommendation, not in any river actually being designated.

Over the past 10-15 years, one of the main uses of the Wild and Scenic study and management planning process has been to provide a forum for people who care about a river and share in management authority to talk about the future of the river. Often many agencies and landowners have different authorities in a river corridor, requiring close coordination to conserve resources and manage public use. River planning also allows these entities to collaborate on management for an entire watershed.

Management Direction for Designated Rivers. The two main directions are to keep the river in its free-flowing state (no dams or impoundments are allowed) and to maintain the outstanding values that qualified the river for designation. The goal essentially is to keep the river, including approximately a $\frac{1}{2}$ mile wide corridor on each side of the river, like it is today, although this can include restoring some of the values that may have been diminished in the past. Within these guidelines, river management is very flexible.

Non-federal lands, including the bed of navigable streams, are excluded from the authorized boundary of designated rivers, so management of those lands is not subject to provisions of the Wild and Scenic Rivers Act. Designation does not affect determinations of navigability or ownership of submerged lands. Nothing about designation affects the jurisdiction of the State of Alaska with respect to fish and wildlife.

No existing recreational or subsistence uses are prohibited. Public use typically continues at the same level as before designation. Hunting, fishing, and trapping continue, subject to applicable state and federal laws. If studies show that increasing public use or new methods of access have the potential to damage outstanding river values, then public use could be regulated at some time in the future. An agreement between the State of Alaska and the federal government states that studies should be made of the quantity and mix of recreation and other public uses that can occur without interfering with public use and enjoyment of the resource values of the river area.

Many rivers in the system flow through designated Wilderness. Generally, when this is the case the most restrictive provision applies when a management issue surfaces. In most cases little additional protection is gained, but there are some distinctions. For example,

the President can authorize a dam in Wilderness, but not on a Wild and Scenic River. Also, there is the possibility that proposed Wilderness will not actually be designated. In that case, river corridors would still be protected from development. Another consideration is that even if the river and its corridor are already protected, it may still make a worthy and unique addition to the national system.

Designation does heighten a river's visibility, and has led to some increases in use on some rivers. However, it can be difficult to separate this increase from that which would have occurred anyway due to increased popularity of river recreation in general. Because of the remoteness and expense of visiting most rivers on the Togiak Refuge, sudden increases in use resulting from designation would not be likely.

Wild and Scenic River Study Process. The process begins by identifying the most outstanding rivers on the Refuge, ones that would truly be worthy additions to the national system. This step (the eligibility analysis) has been completed by Togiak Refuge staff and the results approved by the Core Team.

The suitability step relies on additional analyses, public comments collected during the planning process, and the views of the core planning team. This step identifies which of the eligible rivers should actually be recommended for designation. The Draft EIS will consider a range of options, from recommending none to recommending a number of rivers. Preliminary analyses suggest that the following river segments are eligible for addition to the system:

The North Fork Goodnews River from Goodnews Lake to the confluence at the Wilderness boundary 27 miles down, is eligible for its outstanding fish and wildlife habitat, sport fishery, and cultural values (subsistence resources and uses).

The 30-mile segment of the Togiak River from its headwaters to the Wilderness boundary is eligible because of its outstanding fish and wildlife habitat, recreational, and cultural values (subsistence resources and uses).

The Ongivinuk, from the outlet of Ongivinuk Lake 16 miles to its confluence with the Togiak River, is eligible because of its outstanding recreational, scenic, and fish and wildlife values.

The 70-mile stretch of the Kanektok River from Kagati Lake to the wilderness boundary is eligible for its outstanding fish and wildlife habitat, sport fishery, and cultural (subsistence resources and uses) values. The Kanektok was considered for possible designation in the 1980s but was not recommended. In addition, at the request of the Core Team, the eligibility and suitability of the Lower Kanektok and the Arolik will be studied. These rivers were not included in the initial list because they are bordered exclusively by private lands.

The Kemuk, from the outlet of Nenevok Lake to its confluence with the Togiak River 28 miles downstream, is eligible because of its outstanding recreational, scenic, geologic, and fish and wildlife habitat values.

Trail Creek, flowing 27 miles from its headwaters in the Ahklun Mountains at its headwaters in the northern part of the Refuge to its confluence with the Izavieknik River, is eligible because of its outstanding recreational, scenic, geologic, and fish and wildlife habitat values.